Australia, Dr. Krümmel obtains the mean of 420 metres, or 0·0566 miles. The surface-ratio of land to water being considered 1 : 2.75, the volume of all dry land above the sea-level is inferred to be 140,086 cubic miles, and the volume of the sea 3,138,000 cubic miles. Thus the ratio of the volumes of land and water is 1 : 22·4. That is, the continents, so far as they are above the sea-level, might be contained 22·4 times over in the sea-basin. Reckoning, however, the mass of solid land from the level of the sea-bottom, the former would be contained only 2·443 times in the sea-space. Dr. Krümmel also compares the masses (taking recent data); he finds that of the sea 3,229,700 cubic miles, and that of the solid land 3,211,310 (a small difference). If the specific gravity of the land were raised merely from 2·5 to 2·51432, we should thus have perfect equilibrium. Such equilibrium is probably the fact.

NEWS has been received from Moscow that Colonel Grodekoff, of the Russian general staff, has returned to that place from a somewhat venturesome expedition in Central Asia, during which he travelled in European clothes, and without any attempt at disguise. He was accompanied by a Kirghiz and two Persians, and traversed the northern part of Afghanistan, reaching Persia by way of Herat.

IN connection with the Russian scheme for a railway from Orenburg to Tashkent, it is stated that the Grand Duke Nicholas is preparing a third expedition for 1879, which is to set out in the end of March. After having passed Tashkent and Samarkand, it will cross the Amu and pursue its researches to the defile of Bamian, in Afghanistan, in the direction of Kabul. The explorers will then descend the Amu in a native boat, from the meridian of Balkh to Khiva, for the purpose of investigating the navigation of that river. From Khiva they will follow the ancient bed of the river to its old mouth in the Caspian.

CAPT. HOWGATE has presented to the United States Congress a supplementary note on the advantages arising from the creation of a polar colony on the border of the great palæocrystic ocean. The whaling interest is fast on the decrease in the States; the total value of imports being only two million dollars instead of ten millions twenty years ago. This deficit has been attributed by Agassiz and other competent authorities to the whales taking refuge in that almost inaccessible polar basin, to which, by the creation of a civilised station at Lady Franklin Bay, access might be gained.

THE Conference on the civilisation of Africa held a meeting recently at Brussels under the presidency of the King of the Belgians. It is stated that Mr. Stanley, who was present, "will be placed at the head of the approaching Belgian Exploring Expedition to Africa."

PETERMANN'S *Mittheilungen* for February contains a detailed account, with map, of Dr. Woeikoff's travels through central and southern Japan in 1878. In connection with a narrative of the discovery of the island Einsamkeit to the north-east of Novaya Zemlya is a map of the island showing its configuration and relative position. Prof. Hann contributes a short paper on the climate at the Victoria Nyanza on the basis of data collected by Dr. Emin Bey and the Rev. Mr. Wilson.

THE January number of the *Bolletino* of the Italian Geographical Society contains a long letter from Lieut. Bové, who accompanies Nordenskjöld's expedition; it was written from the mouth of the Lena, and gives many important details of observations made up to that point.

THE December *Bulletin* of the Paris Geographical Society contains a valuable sketch of the work done in Sumatra by the Dutch expedition, which started in the beginning of 1877 under the late M. Santwoort, and of which we have from time to time given news. The sketch is by Col. Venteggio. The number contains also the addresses by M. Huber in presenting the medals for 1878 to Mr. Stanley, M. Vivien de St. Martin, and Dr. Harmand.

A YOUNG Austrian painter, Herr Joseph Ladein, of Mödling near Vienna, has recently started for a tour through Central Africa. In a letter dated from Oran he states that his intention is to proceed through Marocco, to cross the Great Desert to the Senegal River, then to turn eastward to Haussa and the Nile Lakes, and to return to Europe along the course of the Nile.

A BRANCH of the new Berlin "Society for Commercial Geography and the furtherance of German Interests Abroad" has been established at Leipzig.

M. L. BABÉ has announced to the Paris Geographical Society that he proposes to explore the globe by means of an improved Montgolfier balloon, capable of storing heat in all regions and of maintaining a sufficient height for several weeks.

BAD news has been received from Zanzibar by the French Geographical Society. It appears that two of the French missionaries who were exploring this part of Africa have died, one of them by illness, and the other having been killed by a lion.

NOTES

AT a full meeting of the Council of the Zoological Society, held on the 5th inst. at the Society's office, in Hanover Square, Prof. William Henry Flower, F.R.S., Conservator of the Museum of the Royal College of Surgeons, was unanimously elected president of the Society, in succession to the late Marquis of Tweeddale. The new president, who, we need hardly inform the readers of NATURE, is one of the most learned zoologists and anatomists of the present day, has been for some years on the Council of the Society and one of its vice-presidents, and has communicated many valuable memoirs to its *Transactions* and *Proceedings*. Prof. Flower is the seventh president elected since the foundation of the Society in 1826. Sir Stamford Raffles, the first president, who died a few months after the foundation of the Society, was succeeded by the Marquis of Lansdowne, who resigned in February, 1831, in favour of the thirteenth Earl of Derby, then Lord Stanley. He held the presidentship for upwards of twenty years, and on his death, in 1851, was succeeded by the late Prince Consort. On the death of the Prince Consort, in 1861, Sir George Clerk, of Penicuik, was chosen as his successor, and retained the presidentship until his death, in 1867. He was succeeded in January, 1868, by the late Lord Tweeddale, then Viscount Walden, whose death has caused the vacancy to which Prof. Flower has succeeded.

THE Chemical Society have received from the executors of the late Mr. Sydney Ellis a legacy of 1,000*l*. free of duty.

THE friends of Prof. Clifford, who has been compelled by ill health to relinquish active work and reside in Madeira, are anxious to present him with a substantial testimonial in public recognition of his great scientific and literary attainments. At a meeting held at the Royal Institution, Albemarle Street, on Friday, January 31, Dr. William Spottiswoode, President of the Royal Society, in the chair, it was resolved that a fund should be raised for the above-mentioned purpose, and that the sums received should be placed in the hands of trustees, for the benefit of Prof. Clifford and his family. Contributions may be paid to the account of the "Clifford Testimonial Fund," with Messrs. Robarts, Lubbock, and Co., or to either of the Honorary Secretaries. Among the gentlemen who have kindly consented to act on the General Committee are the following:—Dr. William Spottiswoode, Dr. Andrew Clark, Prof. R. B. Clifton, F.R.S., Prof. T. H. Huxley, Prof. Henry Morley, Prof. A. Newton, F.R.S., Sir Fred. Pollock, Bart., Prof. Roscoe, F.R.S., Prof. H. J. S. Smith, F.R.S., Hon. Mr. Justice Stephen, Sir Henry

Thompson, Prof. John Tyndall, D.C.L., F.R.S., Prof. Alex. W. Williamson, Ph.D., F.R.S. Dr. William Spottiswoode, Pres. Roy. Soc., and Sir John Lubbock, Bart., M.P., F.R.S., are Joint Hon. Treasurers and Trustees.

A GRANT of 75*l.* has been made from the Worts (Cambridge) Travelling Scholars' Fund to John Edward Marr, B.A., St. John's, to enable him to travel in Bohemia and collect evidence and specimens bearing upon the question of the classification of the Cambrian and Silurian rocks, with the understanding that specimens be sent by him to the University, accompanied by reports which may be hereafter published.

WE have already referred to the fact that the inhabitants of Heilbronn, desirous of paying due respect to the memory of Dr. Julius Robert Mayer, who was born there, have resolved to erect a suitable memorial on the spot where he lived, laboured, and died. They invite co-operation, and, with the view of enabling the admirers of Dr. Mayer in England to join in this tribute of recognition, some of the most eminent men of science in England have agreed to form a Mayer-Memorial Committee; the list is headed by Dr. William Spottiswoode, Pres. R.S. Subscriptions exceeding 1*l.* may be sent by cheque to Messrs. Robarts, Lubbock, and Co., 15, Lombard Street. Smaller sums may be sent by Post Office Order to the Hon. Secretary, T. Archer Hirst, Royal Naval College, Greenwich.

M. LÉON LALANNE, Director of the School of Ponts et Chaussées, has been elected to fill the place of the late M. Bienaymé, in the Paris Academy of Sciences.

WE are glad to see that several important and much-needed reforms are being introduced into the British Museum. The Museum is now open free to the public on every week day—Monday till Friday from 10 o'clock, and on Saturday from 12 o'clock till the ordinary hour of closure. Special arrangements have been made to enable students to carry on their work without interruption. Students of natural history will have Tuesday and Thursday reserved for their studies, students of archæology Wednesday and Friday. On Monday and Saturday the public will be able to view the whole of the collections; on Tuesday and Thursday, all except the natural history specimens; and on Wednesday and Friday, all except the Greek and Roman sculptures, and antiquities in the upper gallery. Persons holding tickets of admission to the reading-room, the department of prints and drawings, the sculpture galleries, and the departments of natural history will not be required to renew them every six months, as the tickets will be granted to readers and students without limit of term, but subject to withdrawal. The actual presentation of the ticket will not be considered necessary for entrance into the reading-room. These and several other new arrangements seem to show that the Museum powers have at last come to the conclusion that the institution exists for the benefit of the public, and that their convenience ought to be made paramount in all arrangements.

THE obituary list of foreign men of science is heavy this week. We much regret to announce the death, on January 24, of Dr. Heinrich Geissler, the celebrated inventor in the field of physical mechanics. Dr. Geissler died at Bonn at the age of sixty-five years. Amongst his inventions are the well-known Geissler tubes, the vaporimeter, the mercury-pump, &c. We regret to have to record the deaths of two other eminent German men of science, viz., that of Dr. Eduard Lösche, Professor of Physics at the Royal Polytechnic Institution of Dresden, and well known naturalist, who died on January 25, aged fifty-eight; and that of Dr. Benedikt Stilling, of Cassel, whose name was but recently mentioned as one of the hon. secretaries at last year's meeting of the German Association. Dr. Stilling was an eminent anatomist; he was born at Kirchheim, near Marburg, on February 22, 1810, and died at the same place on January 28, aged sixty-nine years. The death is announced of Dr. Steinheil, the eminent optician of Munich. M. Paul Gervais, the distinguished palæontologist and Professor at the Paris Jardin des Plantes, died on Monday in his sixty-third year.

Apropos of the statue to Gauss, the following extracts from a Brunswick correspondent may interest some of the readers of NATURE. The sum collected, including contributions of 3,000 marks each from the Emperor of Germany and the Duke of Brunswick, promised subscriptions and interests, has now reached 41,000 marks. Herr Schaper has almost, if he has not quite, finished the statue; the casting in bronze is then to be superintended by Prof. Howaldt of Brunswick. A Berlin firm will provide the pedestal of red granite from Sweden. The statue will be one and a half life size, standing eight feet four inches (Rhenish measure), and the pedestal will be of about the same height. It is hoped that the unveiling of the statue will take place on April 30, 1880—the anniversary of Gauss's birth.

A CONCURRENT resolution of thanks to Prof. Hayden for his "accurate and comprehensive survey of the State of Colorado" passed the Colorado legislature, January 14. Senator Gaussion, who is himself an eminent mining engineer, remarked—"These reports, coming from a scientific and authoritative source, do more to answer and satisfy the inquiries of capitalists than everything else. They tell the world what the great western country is made of. The western domain of the United States is to-day the glory of the nation."

WE are asked to state that supplemental meetings, for the reading and discussion of papers by students of the Institution of Civil Engineers, have been appointed for the following Friday evenings:—February 14, 21, 28, and March 7. The papers to be read on these evenings are respectively: "The Excavating of a Tunnel in Rock by Hand Labour and by Machinery," by John C. Mackay: "The Design and Construction of Wrought-Iron Tied Arches," by Percy W. Britton; "The Cost and Construction of a Cheap Light Railway," by Alfred W. Szlumper; and "The Interlocking of Points and Signals and the Electric Block System," by George D. Marston. The chair will be taken at 7 o'clock on each evening, and successively by Mr. Hayter, Mr. Barlow, F.R.S., Mr. Bruce, and Mr. Woods, Members of Council.

SOME recent experiments by Herr Holmgren in Prof. Kühne's laboratory in Heidelberg seem to prove that the variations of the retina current through the action of light have no essential relation to the blanching and regeneration of the so-called "visual purple," thus increasing the difficulty of regarding that purple as directly connected with vision. In one experiment an eye of a newly killed frog was kept half an hour to an hour in sunlight, till all the visual purple was blanched. Variations of the retina current on incidence of light were found to occur in the ordinary way. Again, one eye of a rabbit was protected against the action of light by sewing the ear over it, while the other eye was exposed to the light. The animal showed normal variations of the retina current, and when the eyes were examined, with the necessary precautions, the normal amount of purple was found in the covered eye, while the other, which gave variations of the current, was quite without purple. Conversely, eyes of frogs and rabbits were taken out and treated with alum solution in the dark. The visual purple was thus maintained twenty-four hours, and it was then exposed to light. The light blanched it, like that of a fresh eye, but there was no trace of variation of current in consequence of this action. The author's conclusion regarding vision finds support in the facts that visual purple is wanting in some animals, which must be supposed capable of sight, and that it is absent from the yellow spot in man, and so from that part of the retina in which vision is most distinct.

In a recent series of demonstrations at La Salpêtrière, Paris, Prof. Charcot has shown, *inter alia*, that it is possible to produce in one subject a state of catalepsy on one side of the body, and a simultaneous state of lethargy on the other. The patient is first thrown into catalepsy by looking at the electric light (in this state the limbs are supple and will retain any position one chooses to give them). To produce the state of lethargy or somnambulism on one side, it is sufficient to close the corresponding eye, or shut off the light with a screen; the two states are then coexistent on the two sides of the body.

We learn from the *North China Herald* that at the December meeting of the Shanghai branch of the Royal Asiatic Society, a paper was read by M. A. A. Fauvel, on the alligators of China, on which occasion the author exhibited a live specimen obtained last October from Chinkiang, on the Yangtsze-kiang, as well as a cranium and skeleton, and a stuffed crocodile for comparison. The paper commenced with a philological dissertation on the names by which the saurians of China have been known at various times, and the specimen exhibited (between 5 and 6 feet long) was identified with the *t'o* or *ngo* of the old writers. Among modern writers, the late Mr. Swinhoe seems to have been the first to allude to its existence, and in 1869 a specimen was exhibited in the Chinese city of Shanghai. Père Heude more recently nearly became the possessor of a specimen which he only lost through his servant haggling over the price. At various times reports have reached Shanghai of crocodile-like animals being seen in the Yangtsze-kiang, but Mr. L. E. Palm, of the Chinese Customs' service, was the first to obtain a genuine specimen, which was presented to the Society last year. A careful examination soon showed, according to M. Fauvel, "that it was no crocodile, but a genuine alligator, a most interesting fact, as hitherto no alligator has been met with in the Old World, the genus being supposed to be confined to the rivers of America." M. Fauvel then explained from the specimens, and by means of careful drawings, the peculiarities of the genus. The Chinese animal seemed to resemble most the *Alligator lucius* of the Mississippi, but, as it seemed to belong to a distinct species, he proposed for it the specific title of "*sinensis*," until further research should establish or disprove the distinction.

The *North China Herald* publishes some notes of a journey made during last October by the Rev. J. S. Crossette, in the northern part of the Chinese province of Shantung, in the course of which he visited a cotton-growing district. His account of this industry is not very encouraging. The scraggy little shrub, he writes, not as high as the knee, black as if blasted by mildew or killed by frost, looks very different from that in the cotton-fields of the United States; and in his opinion the introduction of some foreign cotton-seed would effect a great improvement.

According to the *Democrat*, San Francisco is to be the first city whose streets are to be lighted entirely by the electric light. It is proposed to divide the city into districts, varying in extent from one to three miles, each of which will be fed by a sufficiently powerful Gramme machine. The machines have already arrived at New York, and arrangements have been made for adopting two or three different patents. The *Electrician* says:—"The experimental trial of the electric light at the works being executed at the port of Havre has given complete satisfaction. Without waiting for the report of the committee nominated by the French Board of Works, the Chamber of Commerce has authorised the establishment of ten lights in the outer port."

In his last report to the Foreign Office, H.M.'s Consul at Tamsui, Formosa, calls attention to one or two features of interest in connection with the camphor trade there, which is assuming considerable proportions. Formosa, it is well known, is one of the very few districts in the world which produce camphor, the others being Japan and some parts of the Malay Archipelago. The tree from which it is obtained (*Camphora officinarum*), is said not to be known on the mainland of China; camphor, at any rate, is not extracted from it there. The camphor-producing tree of the Malay Archipelago differs from that growing in Formosa and Japan, and, in addition to the crude camphor, produces a valuable medicinal gum, known to merchants as "camphor baroos," the duty on which in China is about 6*s*. per pound. The Formosan tree, on the contrary, does not produce this gum.

As showing the much greater attention gradually being directed to Singapore and the Malay Peninsula, to which we have from time to time alluded, it will not be uninteresting to record that some land at Tanjong Pagar, which, not a great number of years ago, was bought from the East India Company at the rate of 1 rupee for fifteen acres, was recently sold at prices ranging from 20,000 dols. to 30,000 dols. per acre.

Owing to the melting of mountain snows and torrential rains, the Lake of Geneva reached a higher level last month than it has been known to attain at this season in the forty-one years during which its fluctuations have been noticed.

It is rumoured that M. Ferdinand de Lesseps will be appointed Governor-General of Algeria.

M. Maurice Sand has discovered and published an account of a "pre-historic flint-implement workshop" near the village of Loges, on the frontier of the Indre and the Cher. On the summit of a heath, almost on a level with the surface, he has picked up hundreds of fragments of flints, convex on one side, concave on the other; also lanceolated axe-heads, arrow-heads, a jasper axe, and many scrapers in red and white cornelian or sardonyx. The flint-layers cropping out to the surface bear marks of human labour.

The collection of maps, plans, and views of London and Westminster, made by the late Mr. Frederick Crace, and lent to the South Kensington Museum by his son, Mr. J. G. Crace, is now on view from 10 to 4 daily, in two of the upper rooms in the galleries on the west side of the Horticultural Gardens. The plans and views selected from the collection for exhibition are 3,085 in number. A complete catalogue, compiled from Mr. Crace's larger work, has been issued by the Stationary Office.

New Guinea is rapidly ceasing to be *terra incognita*. Thanks to both scientific and missionary enterprise we have lately learnt much both of its geography and ethnology. Recently, and in this country alone we have had the results of the experience of D'Albertis, Comrie, Kiehl, Lawes, Moresby, Stone, and Turner. In the *Chronicle of the London Missionary Society*, October, 1878, we have, under the title "New Guinea," an account of the journeys made by the Rev. Jas. Chalmers. He is stated to have visited one hundred and five villages on the south coast of the mainland during the spring of last year, and ninety of these villages are reported as being visited for the first time by a white man. From Mr. Chalmers's general ethnological notes we learn that these natives cook the heads of their slain enemies to secure clean skulls to place on sacred places. Each family has a sacred place where offerings are carried to the spirits of deceased ancestors. This ancestor worship seems to be carried on with great fear. The spirits of their dead are invoked at the commencement of planting, at starting on trading expeditions, &c. They have one great spirit—Palaku Bara, who dwells in the mountains. Pigs are always killed in the sacred place and offered to the spirit, after which the carcase is carried back to the village to be divided and eaten. During this expedition the entire coast line from Keppel Point to McFarlane Harbour was traversed on foot.

PERHAPS no branch of anthropology has been more cultivated or yielded larger results during the last few years than that relating to prehistoric man. At the same time no inconsiderable part of the evidence has been derived from the examination of osseous and other remains in caves both in England and on the continent. The greatest interest has always been felt in the revelations that might accrue to the science of anthropology by an investigation of the bone-caves of Borneo, situated as that island is on the confines of the lost continent Lemuria, where Dr. Peschel thinks it possible that the first appearance of man may have taken place. In his late presidential address to the Anthropological Institute, Mr. Evans referred to the fact that Mr. Everett, a well-known naturalist, had undertaken to devote a twelvemonth to the prosecution of cave-researches in Borneo. Mr. Everett commenced his researches in October last, and the principal proceeds from more or less extensive excavations in several caves are now on their way to this country. Mr. Everett's first quarterly report had just been received by Mr. Evans, in which the discovery is reported of numerous mammalian remains, the age of which has still, of course, to be determined, and also of remains of a race of men of whom no local tradition seems to be extant, and who habitually used the caves of Upper Saráwak either as domiciles, or as places of sepulture, or possibly for other purposes. Though unknown to history or tradition, this race of men appear to have been acquainted with the use of manufactured iron, so that, probably, no great antiquity is to be assigned to the remains already discovered. Mr. Evans stated that at least 100*l.* has still to be forthcoming for the exploration fund, in addition to what has been already subscribed, and that he would be happy to receive subscriptions.

THE magnetic behaviour of iron in the form of powder has lately been investigated by Prof. von Waltenhofen, of Prague. Three samples of finely pulverised and chemically pure iron, filling well-closed glass tubes, were magnetised by means of spirals of wire, through which were sent currents of increasing intensity, and the magnetic moments thus produced were measured. A comparison of these with those excited in equally heavy iron and steel bars by equal magnetising forces shows that the specific magnetisability of pulverised iron is not only much smaller than that of coherent iron, but even smaller than that of the hardest kind of steel known, viz., glass-hard Wolfram steel. Prof. Waltenhofen seeks an explanation of this in the circumstance that the magnetic mutual action of the polar molecules, which strengthens the action of exterior magnetising forces, is greatly lessened through the comparatively great intervals between the particles of the powdered iron; and the numbers he obtained led him to the conclusion that the electro-magnetism of an iron bar is to be regarded only in the least part as due to direct action of the magnetising current, and mainly due to that reciprocal action of the molecular magnets.

IN his ninth Bridgewater treatise, Mr. Babbage refers to the possibility of constructing an automaton which would play the simple game of tit-tat-to (or "oughts and crosses"). Such a machine (probably the first ever constructed), working on the principle of a mechanical table, has been made by Mr. Freeland of Philadelphia. It is described in the January number of the *Journal of the Franklin Institute*, and was exhibited at the Institute on October 16 last year. It is now at the University of Pennsylvania, where, since its final adjustment, it has played a large number of games without losing a single one.

EARTHQUAKES are reported from Waldkirch and Buchholz, in Baden, on January 26, at 10 P.M. Both villages are situated in the Elz Valley, on the slopes of the Kandel Mountain, which measures 1,380 metres in height. A violent shock was also felt in the Swiss Canton of Uri on January 24, at 2 A.M.

THE Italian Secretary for Agriculture, Industry, and Commerce, has offered a prize of 3,000 lire (about 115*l.*) for the best monograph on the cultivation, growth, and diseases of the species *citrus* (the common lemon-tree). The competition will last until May, 1881, and all particulars may be learnt direct from the Secretary's office at Rome.

A VERY satisfactory Report comes to us from the Free Library Committee of Dundee. Under the care of Mr. Maclachlan, the library, in the quality of its contents and its organisation, is becoming one of the first of the kind in the kingdom, and is evidently well appreciated by the busy and inquisitive workers of Dundee. Scientific works have a large share of attention, and the museum, we are glad to see, is rapidly extending, and is likely ere long to be worthy of one of our great commercial centres. We have received a carefully compiled fourth supplement to the catalogue of the Library.

THE additions to the Zoological Society's Gardens during the past week include two Slender Loris (*Loris gracilis*) from Ceylon, presented by Mr. Leith Bonhâte; a Common Rhea (*Rhea americana*) from South America, presented by Major Venables; a Purple-crested Touracou (*Corythaix porphyreolopha*) from East Africa, presented by the Rev. J. A. Gould; a Geoffroy's Dove (*Peristera geoffroii*), bred in the Gardens.

OXYGEN IN THE SUN[1]

THE paper referred to appeared in the October number of this Journal.[2] A cursory glance at it gives the impression that the methods had been carefully criticised beforehand, that the experiments had been made with minute accuracy and that the results were trustworthy; but closer examination of it raises most serious questions on all the points mentioned. Errors of method and of experiment appear which make it quite impossible to accept the conclusions reached. It is the purpose of this note to point out some of these.

In the first place the author throughout the paper confounds Ångström's scale numbers with wave-lengths. Thus, for example, p. 257, he says, line 18, the photographs were "in sections of eighty to one hundred wave-lengths," line 24, "each wave-length being five millimeters in extent," and line 34, "each section of one hundred or more wave-lengths;" p. 258, line 24, "Error amounting to half a wave-length could therefore exist in the position of a line, according as it fell on one side or the other of a figure on the scale expressing a wave-length;" p. 259, line 18, one iron line "to every eleven wave-lengths was used;" p. 261, line 18, no element gives "a line within two or three-tenths of a wave-length of that position;" p. 264, line 16, "no other element furnishes a line which falls on the same wave-length." In proof that he really means scale divisions, he gives a section of his chart on p. 259, and says, line 38, "On the first space below the line is the scale of wave-lengths, each wave-length being five millimeters in extent;" and p. 260, line 28, "in the eighteen wave-lengths represented in the diagram." There are eighteen scale divisions in the diagram, each scale division being five millimeters long. Again, p. 264, referring to the coincidence of oxygen and solar lines in his table, he says, line 2, "in four, the difference is only five one-hundredths of a wave-length; in twenty-two, ten one-hundredths of a wave-length; in four, fifteen one-hundredths of a wave-length; in eleven, twenty-one one-hundredths of a wave-length; and in the remainder, the greatest difference is only thirty-five one-hundredths of a wave-length." Referring to the table, the four lines first mentioned are given as 3982·75, 4075·50, 4345·15, and 4483·80; the corresponding oxygen lines being given as 3982·70, 4075·45, 4345·20, and 4483·75. The difference is obviously five one-hundredths of a scale division, not of a wave-

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[1] Note on J. C. Draper's paper "On the Presence of Dark Lines in the Solar Spectrum which correspond closely to the Lines of the Spectrum of Oxygen." From the *American Journal of Science* for February. Communicated by the Author.

[2] See NATURE, vol. xviii. p. 654.